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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/650,212	08/28/2003	Robert W. Byren	PD-03W043	7151

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PATENT DOCKET ADMINISTRATION  
RAYTHEON SYSTEMS COMPANY  
P.O. BOX 902 (E1/E150)  
BLDG E1 M S E150  
EL SEGUNDO, CA 90245-0902

EXAMINER
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DIEP, NHON THANH

ART UNIT	PAPER NUMBER
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2621

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/650,212

Applicant(s)

BYREN, ROBERT W.

Examiner

Nhon T. Diep

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9-28 and 30-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Turpin (US 5,751,243).

Turpin discloses an image synthesis using time sequential holography comprising the same imaging system comprising: first means mounted on a mobile platform for receiving a beam of electromagnetic energy (figs. 9a and fig. 9b, receiver 94, col. 14, ln. 1-6); second means for recording an image provided by said beam (fig. 10, el. 134), said second means for continuously recording a relayed image of an aperture plane of said system (TSH = Time sequential Holography, wherein measurements are made sequentially and independently of each other = more than one image is being recorded (col. 2, ln. 18-20) and as indicated in figure 9(a), the system is carried by the aircraft some distance away from the object and as further indicated in figure 1, and in col. 6, ln. 23-42 the images of object are detected and recorded by photosensor and outputting the results to integrator for reconstructing images for displaying in the display 18); and third means for compensating said image for motion of said platform relative to an external reference (fig. 9b, el. 108) as specified in claims 1, 10 and 31; wherein said second means includes means for digitally storing a

holographic image (col. 13, ln. 47-50, col. 15, ln. 28-37, 55, col. 30, ln. 50 – col. 31, ln. 17 and col. 34, ln. 42- co. 35, ln.) as specified in claim 2; wherein said holographic image is an interference pattern (col. 13, ln. 47-50, col. 15, ln. 28-37, 55 and col. 34, ln. 24-42) as specified in claims 3, 11 and 34; wherein said second means is a camera (fig. 10, el. 134) as specified in claim 4; said second means is a one-dimensional detector array (col. 23, ln. 45-47) as specified in claim 5; said second means is a two-dimensional detector array (fig. 19: 2-D photosensor array 288) as specified in claim 6; means for reading said holographic interference pattern (col. 34, ln. 24-42) as specified in claims 7, 19 and 35; means for transmitting a beam from said platform to said target (fig. 10, el. 122) as specified in claims 9 and 12; said first means includes a laser (fig. 3a, el. 22) as specified in claim 13; wherein said received beam is a reflection of said transmitted beam from said target (fig. 9a) as specified in claim 14; means for providing a reference beam (col. 14, ln. 1-30) as specified in claim 15; further including means for causing said reference beam and said received beam to interfere at an optically relayed aperture plane and thereby provide said holographic interference pattern; further including means for controlling the phase of said reference beam relative to said received beam; further including means for controlling the phase of said reference beam relative to said received beam to compensate for nonlinear motion of said platform during a predetermined time interval (col. 13, ln. 47 – col. 14, ln. 60) as specified in claims 16-18; wherein the first means is a focusing lens (fig. 12, el. 162) as specified in claim 20; wherein said second means is a recording medium (col. 22, ln. 4-26) as specified in claim 21; wherein said recording medium is a holographic recording

medium (col. 21, ln. 45-57) as specified in claim 22; wherein said holographic recording medium is re-recordable (inherently included: any recording medium is designed to recorded and to retrieve and when retrieving, the information is always re-recordable) as specified in claim 23; wherein said third means includes a scan mirror; wherein said third means includes means for controlling said scan mirror (fig. 16, el. 222 and 228 and col. 19, ln. 64 – col. 20, ln. 24) as specified in claims 24-25; wherein said means for controlling includes a controller and said third means includes means for providing platform velocity information to said controller (inherently included in the motion compensation of fig. 9b, el. 108) as specified in claims 26 and 28; wherein said means for controlling further includes means for providing sensor line of sight information (fig. 16, el 236) as specified in claim 27; and a holographic synthetic aperture ladar system comprising: a laser (fig. 3a, el. 22), mounted on a mobile platform (fig. 9a: airplane) and adapted to output a beam of coherent energy (fig. 10, el. 122); an optical arrangement mounted on said platform for directing said beam to a target and receiving a reflection therefrom (fig. 9a); a scan mirror in optical alignment with said optical arrangement (fig. 16, el. 222, 228); a holographic optical storage medium (col. 34, ln. 42-60); and a controller for directing said scan mirror to adjust a position of said reflection on said medium in response to motion of said platform relative to said target (fig. 16 and fig. 9b, el. 108) as specified in claim 30; an imaging system comprising: first means mounted on a mobile platform for receiving a beam of electromagnetic energy and second means for recording an image by said beam (figs. 9(a) and 9(b), said image being an interference pattern between a beam scattered by a target and a reference beam (col. 13, ln. 47-50,

col. 15, ln. 28-37, col. 34, ln. 42- co. 35, ln. 55 and fig. 9(b), el. 98-102-109) as specified in claim 32; said image is a relayed image from an aperture (fig. 16, el. 236) as specified in claim 33.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turpin, in view of Blecha et al (cited by the applicants).

As applied to claims 7 and 35 above, it is noted that Turpin does not particularly disclose means for reading said pattern includes means for performing time delay integration. Blecha et al teaches that TDI is a process whereby the sensitivity of a scanning 2-D detector array is enhanced. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Turpin by using TDI process to scan 2-D detector array. Doing so would help to enhance the scanning process.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhon T. Diep whose telephone number is 571-272-7328. The examiner can normally be reached on m-f.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
NHON DIEP  
PRIMARY EXAMINER

ND  
8/6/2007